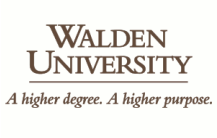

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Self-Efficacy and Self-Management Assessments on Hispanic Patients with Diabetes

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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2016

Abstract

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by

Yesenia DeJesus RN, MSN

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

November 2016

Abstract

Hispanics are at increased risk for diabetes and are 40% more likely to die from the condition than are non-Hispanic Caucasians. The purpose of this project was to determine the effects of diabetes education conducted in Spanish by bilingual staff on the self-management and self-efficacy of a sample of 50 volunteer adult Hispanic clinic patients with diabetes. The education intervention incorporated the American Diabetes Association's Diabetes Self-Management Education program materials. Bandura's self-efficacy theory was selected as the theoretical support for the project that relied on self-management education of the patients to improve their self-efficacy to undertake the interventions necessary to manage their disease. The Diabetes Self-Management Questionnaire measured patient understanding and self-care management of diabetes before and after the education intervention, and the Diabetes Self-Efficacy Scale measured the self-efficacy of the patients before and after the intervention. Paired sample *t* tests were calculated to compare the pretest to posttest scores on the full questionnaire and subscales. The full scale and the glucose monitoring control and physical activity subscales showed statistically significant improvement pretest to posttest. An increase in the pretest to posttest Diabetes Self-Efficacy Scale scores was not significant. Results indicated that the diabetes education was an effective way to improve self-reported daily blood glucose monitoring and physical activity. The project may result in positive social change from the better self-management of some diabetes control skills among Hispanic adult patients when education is delivered in Spanish.

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Dedication

For Andrean Stephanie and Monika Daliz.

Acknowledgments

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Section 1: Nature of the Project

Introduction

Diabetes is considered an epidemic and its prevalence continues to grow at an increasing rate among the Hispanic population, the largest minority group in the United States (ADA, 2014). Diabetes is a disease that is affected by interdependent genetic, social, economic, cultural, and historic factors (ADA, 2014). Diabetes not only affects the quality of life of people with the disease but also presents a tremendous economic burden on the health-care system (Centers for Disease Control and Prevention [CDC], 2011). Among the Hispanic population living in the United States, the incidence of diabetes has risen and mortality related to disease has increased by 46% since 2009 (American Diabetes Association [ADA], 2012). Understanding the challenges and opportunities in the Hispanic population related to diabetes is necessary to develop and implement comprehensive culturally-oriented diabetes care, education, and outreach research programs (Wessling, 2010).

Problem Statement

The problem I addressed with this project was two-fold: (a) the lack of a systematic diabetes education program and (b) the need for language and culturally congruent care for Hispanic patients with diabetes in the study site clinic (pseudonym), a Florida primary care clinic. According to the ADA (2009), many patients with diabetes in the United States have poor glycemic control, placing them at high risk of diabetic complications. To reach and stay at a healthy weight and keep blood glucose, blood pressure, and cholesterol levels under control, patients must adhere to a healthy eating

plan, participate in regular physical activity, and comply with prescribed medications or treatments (Sandmaier, 2005). With good diabetes control and management, the patient can reduce the risk of developing diabetic retinopathy, glaucoma, cataracts, and other eye problems; prevent impotence; decrease birth complications; and reduce or prevent foot problems due to nerve damage (Fernandez, 2010). The ADA developed the Diabetes Self-Management Education (DSME) program, which was implemented in the study site clinic to address the lack of a systematic approach to education for patients with diabetes.

Increased linguistic diversity in the United States presents multiple challenges to ensure adequate communication in health-care delivery. Patients who cannot discuss their condition with a provider in their language may have adverse health outcomes, even when interpreter services are used, according to a study by researchers at the University of California San Francisco and the Kaiser Permanent Division of Research (American Association of Diabetes Educators [AADE]; 2011). Spanish-speaking patients may need direct communication and connection with Spanish-speaking nurses, physicians, and other clinical providers to manage their disease appropriately (Wessling, 2010).

Awareness of the necessity for culturally-oriented and language congruent diabetes care is the first step toward implementing culturally-sensitive and culturally-competent diabetes education. Cultural competence is more than a limited knowledge of culture, beliefs, values, language, customs, thoughts, and actions (Washington State Department of Health, 2010). The ability to achieve relevant cultural insight necessitates the need to evolve a certain amount of cultural shyness (Okun et al., 2014). Cultural shyness or humility will help grow a mutually respectful and positive rapport between

patients and healthcare/clinical providers (Okun et al., 2014). Increased rapport with diabetic patients and their support members will improve the likelihood that they will accomplish the behavioral changes necessary to improve their quality of life (ADA, 2012).

Starting at the intake process of the Spanish-speaking patient, the nurse practitioner and clinic nurses should be capable of exchanging information and identifying patients at risk for diabetes complications. Staff members help patients to access care by coordinating services, evaluating outcomes, and identifying social and environmental barriers for self-efficacy and self-management (ADA, 2015a). The ability of the provider to identify resources, track patient progress, and report outcomes all in the Spanish language is needed. When nurses and other providers in clinics practice with language congruency, cultural knowledge, and a philosophy of responsibility for the welfare of Hispanic patients, social change, reflected in improved self-management and better patients' outcomes, is expected.

Purpose

The purpose of this project was to improve diabetic care and outcomes among the Hispanic adults with diabetes in a Florida clinic through the implementation of the ADA DSME program in the Spanish language. The results of the review of the literature that I conducted supported the importance of self-efficacy to conduct self-management and the need for self-management skills to control diabetes and demonstrated how these concepts are related to the educational needs of patients and lead to overall improvement of

diabetic patients' outcomes. The DSME materials are targeted toward self-management to improve glycemic control (CDC, 2008).

Nature of the Doctoral Project

To address the language disparity among the study clinic patients and the need for diabetes self-management education, the staff members were prepared using the CDC's written guide to establish a community-based DSME program for Hispanic adults with Type 2 diabetes. I retrieved Spanish diabetes educational materials from the ADA website. Using those materials, I then delivered the diabetes education classes in Spanish to the 50 program participants.

The DSME is the cornerstone of care for all individuals with diabetes to achieve successful health-related outcomes (ADA, 2013). I selected the DSME and Bandura's (1997) self-efficacy theory to guide this project because the DSME has shown good results among Hispanic persons with diabetes and Bandura demonstrated that self-efficacy is the most important precondition for behavior change, with the expectations that one can master a situation and produce a positive outcome. In this quantitative, descriptive, intervention project study, I used two existing questionnaires, the Diabetes Self-Management Questionnaire (DSMQ) and the Diabetes Self-Efficacy Scale (DSES), to determine the self-management practices and self-efficacy of the patient sample before and after the Spanish-language education intervention.

The project deliverables included results of the pre- and post-education DSMQ and DSES, teaching materials for nurses to use with Hispanic adult diabetic patients, and patient and recommendations for family-centered care strategies to address the problems

of language and culture incongruity in order to change diabetic Hispanic patients' outcomes (Wessling, 2010).

This project used rapid cycle improvement to implement the DSME education intervention to improve the self-efficacy and self-management of diabetes among a sample of Hispanic clinic patients. The Institute for Healthcare Improvement (IHI) has recommended the use of rapid cycle improvement for clinical settings (IHI, 2008). This model is used to achieve any chosen aim a practice, health-care team, or planning group determines is an achievable program target (IHI, 2008). The project was the first of what will be several rapid cycle trials to collect baseline data related to self-management and self-efficacy, in support of implementing the DSME program at the clinic (Peterson et al., 2008). The project also included a number of small steps or cycles that would lead to achievement of the improved diabetes outcomes for Hispanic clinic patients over time.

Significance

The accelerating rise of diabetes nationally is grabbing the attention of healthcare professionals because of the serious complications of the disease, which can result in the ulceration or amputation of extremities, development of cardiac diseases, loss of sight, neuropathy, loss of teeth and gum disease, and kidney failure (Deshpandle, Harris-Hayes, & Schootman, 2008). Diabetes researchers have reported greater functional impairment with diabetes among Spanish-speaking patients (Wu et al., 2003). Diabetes-specific mortality rates are higher for Hispanics than for most other ethnic groups and are increasing over time (ADA, 2014). After adjusting for population age differences, 2007–2009 national survey data for people aged 20 years or older indicated that 7.1% of non-

Hispanic Caucasians, 8.4% of Asian Americans, 11.8% of Hispanics, and 12.6% of non-Hispanic African Americans had been diagnosed diabetes (CDC, 2011b). Among Hispanics, rates were 7.6% for both Cubans and for Central and South Americans, 13.3% for Mexican Americans, and 13.8% for Puerto Ricans (CDC, 2011b). Compared to non-Hispanic Caucasian adults, the risk of being diagnosed with diabetes was 18% higher among Asian Americans, 66% higher among Hispanics, and 77% higher among non-Hispanic African Americans (CDC, 2011b). Among Hispanics compared to non-Hispanic Caucasian adults, the risk of being diagnosed with diabetes was about the same for Cubans and for Central and South Americans, but 87% higher for Mexican Americans and 94% higher for Puerto Ricans (CDC, 2011b).

Although greater morbidity and mortality rates from diabetes in the Hispanic population cannot be clearly explained, culture, diet, and exercise habits; genetics; economic status; language; and access to care each appear to make a contribution to the disparities (Agency for Healthcare Research and Quality, 2011). Diabetes is largely self-managed, and the changes required for careful and committed controls are dependent on the perceptions and understanding of each individual with the disease (ADA, 2015a). Researchers attempting to understand approaches to self-management in individuals with diabetes have focused considerable attention on improving patients' understanding of the disease (Chesla et al., 2000).

According to Escarce and Kapur (2006), by the year 2050, more than half of the U.S. population will be comprised of people from different cultural backgrounds, including an increase in the number of persons born outside the United States and the

number of persons who do not speak English as their first language. Although the need to consider cultural factors in the care of people with diabetes has been identified for several decades, the population shifts in the United States and the changing health status of cultural, ethnic, and racial groups have created challenges for healthcare providers (ADA, 2009). One obvious barrier to healthcare delivery is language. Language barriers contribute to health disparities among the Hispanic population diagnosed with diabetes (Escarce et al., 2002). Studies found that the Spanish-speaking patients with a language concordant physician asked more questions and had better recall of the instructions and recommendations than the Spanish-speaking patients with a non-Spanish-speaking physician (ADA, 2009). Reaching out to community cultural leaders in churches, volunteer organizations, and schools can be beneficial for understanding cultural habits and getting language assistance (Fernandez, 2010).

Summary

Hispanics with previously diagnosed diabetes are less likely than non-Hispanic Caucasians to have a regular healthcare provider (ADA, 2014). Hispanics/Latinos previously diagnosed with diabetes, but lacking a usual healthcare provider, are less likely to self-monitor blood glucose levels on a regular basis (Mainous et al., 2007). As the costs associated with this disease skyrocket, it is critical not only to understand how and why these disparities exist, but also to invest in prevention and management initiatives that can address the special needs of underserved Hispanic communities.

This DNP project was targeted toward increasing control of diabetes among the Hispanic patients of a Florida clinic and decreasing the social and economic costs of the

disease to the affected individuals and to society. The factors that contribute to the disparity in outcomes for Hispanic diabetic patients were identified from the literature review. The education intervention, the DSME program, implemented in the project to address the problem is supported nationally. Additionally, patients who cannot discuss their diabetes or health issues with a doctor or healthcare provider in their own language may have poorer health outcomes (Fernandez, 2010). Therefore, language and cultural barriers must be examined, discussed, and addressed in programs that target minority populations. In Section 2, I will provide the context of the project.

Section 2: Background and Context

Introduction

The purpose of this project was to improve care and outcomes among the Hispanic adults with diabetes patients of a Florida clinic. The review of the literature, that I conducted and will present in this section, supported the importance of self-efficacy and self-management in control of diabetes and offered approaches to assess and improve diabetes patient education. The DSME program content, which targets self-management skill development, was implemented in the clinic by bilingual volunteer staff and providers so that they could improve patients' self-management, self-efficacy, and condition outcomes. The goals of the diabetes education intervention in the Hispanic population were to reduce the patients' disease exacerbations or complications and enhance their quality of life. According to the literature, patients who lack essential knowledge and perceived ability to use that knowledge are not able to manage their condition effectively (Longtin et al., 2010). In this section of the study, I will discuss the concepts, models, and theories that support the project implementation; the relevance of the project to nursing practice; the local background and project context; the role of the DNP student in the project; and the role of the project team.

Concepts, Models, and Theories

The supporting theories, models, and frameworks that I selected for the project underlie the effectiveness of interventions to help Hispanic patients with diabetes manage their disease. The DSME program selected for implementation in the project has been used widely to improve diabetes care in U.S. primary care settings with positive

outcomes (Funell et al., 2010). Translating evidence-based programs, such as the DSME, into a community-based format can assist clinic patients at risk for diabetes to develop and maintain behaviors (self-management) that can prevent or delay the onset of diabetes complications (Kramer et al., 2011). The DSME is helpful in directing and setting goals as well as providing specific counseling for individuals with diabetes and those who wish to avoid developing the condition (ADA, 2015a). Diabetes education helps individuals with diabetes learn how to manage their disease in order to be as healthy as possible.

To avoid serious health complications, people with diabetes must be taught to manage their disease adequately by maintaining a healthy lifestyle, monitoring blood glucose (HbgA1c) levels, and receiving treatment (Hieronymus & O'Connell, 2015). However, due to a variety of factors, including lack of access to diabetes management education and health services, many people are unable to adhere to these essential maintenance activities (National Association of County and City Health Officials, 2013). A large body of evidence suggested that the empowerment-focused DSME program offers many benefits: better communication with providers, greater satisfaction with care, improved metabolic outcomes, and better psychosocial well-being (AADE, 2011). Important to the overall effectiveness of diabetes education for self-management is delivery in patient-provider concordant language to support the relationship and promote learning about how to manage their disease (Adams, 2010).

Self-Management and Self-Efficacy

The concept of self-management evolved from the research of Creer, Renne, and Christian (1976) and Bandura (1997) and is considered an essential element in chronic

disease management. Self-management is the application of a set of skills that can be taught to patients to help them to control their disease (McCorkle et al., 2011). Self-efficacy is an important measure of the ability to carry out self-management interventions (Hoffman, 2013). According to Glanz (n.d.), the concept of self-efficacy was based on social cognitive theory, which described the interaction between behavioral, personal, and environmental factors in health and chronic disease. Bandura's (1997) self-efficacy theory supports motivation of patients to initiate health promoting behavior directly through increased self-efficacy expectations. The theory also affects motivation, indirectly, through decreasing perceived barriers and increasing commitment (Mohebi, et al., 2013). So, the self-efficacy theory suggested that positive self-efficacy changes self-care behaviors (Bandura, 1997).

I expected the education of the nursing staff and other staff members at the clinic in ways to promote and support self-efficacy in patients' diabetes self-management skills to improve long-term health outcomes in the population. Studies in diabetes education and management have demonstrated the effect of perceived self-efficacy on adherence behavior (ADA, 2006). Bandura (1997) proposed that patients' confidence in their ability to perform health behaviors influenced the behaviors in which they will engage. Because diabetes self-management incorporates behavioral, personal, and environmental factors into daily performance of recommended activities, the concept of self-efficacy is relevant for improving self-management.

The DSMQ and the DSES to Measure Self-Management and Self-Efficacy

With the primary objectives of improving clinical diabetes care, patient knowledge, and treatment satisfaction and reducing health-adverse behaviors in an underserved Hispanic clinic population with diabetes, the ADA DSME program was incorporated into the educational materials prepared for the clinic nurses for this project study (ADA, 2009). In a study performed at a similar community clinic site in San Diego, California, the nurse case manager and peer education/empowerment group demonstrated significant improvements in HgbA1c (12.0% – 8.3%, $p < 0.0001$) at the end of 1 year (Philis-Tsimikas, 2004). Acceptance of the ADA standards for diabetes care and the DSME program led to patients' increased knowledge of diabetes ($p = 0.024$) and increased treatment satisfaction ($p = 0.001$; Powers, 2015).

In this project study, I compared the pre- and post-education intervention scores on both DSMQ and DSES for the convenience sample of volunteer Hispanic clinic patients. The DSES has high overall accuracy in distinguishing patients who do not practice control of their diabetes (Sturt et al., 2010). Patient participation in diabetes education improves health outcomes (Adams, 2010). The DSMQ results reflect the understanding a patient has of diabetes and the need for self-management practices in its control (Quinn et al., 2011).

Various studies provided evidence that the DSMQ was a reliable and valid instrument and enabled an efficient assessment of self-care behaviors associated with glycemic control (Schmitt et al., 2013). The DSMQ was developed at the Research Institute of the Diabetes Academy Mergentheim (Schmitt, 2013). It was the first German

instrument targeting diabetes self-care and was designed to assess behaviors associated with metabolic control within common treatment regimens for Type 1 and Type 2 diabetes in adult patients (Schmitt, 2013). The questionnaire was designed to assess self-care behaviors that can be related to the measure of HgbA1c (Schmitt, 2013). The questionnaire can be useful for scientific analyzes as well as clinical use in both Type 1 and Type 2 diabetes patients (Schmitt et al., 2013). I used the DSES to measure self-efficacy of the patient sample before and after the DSME program implementation. A Pearson's correlation coefficient of −0.46 ($p < 0.0001$) between the DSES and the Diabetes Mellitus Self-Efficacy Scale used in the United Kingdom demonstrated that the DSES had good internal reliability, internal consistency, construct validity, criterion validity, and test-retest reliability (Sturt, Hearnshaw, & Wakelin, 2010).

Relevance to Nursing Practice

According to the ADA (2009), culture influences values, beliefs, and practices related to self-management, medication knowledge, and diabetes outcomes. Differences between ethnic and racial groups provide a context for exploring cultural food practices, attitudes and willingness to make changes, and the ultimate impact on diabetes self-management practices. To best serve the health care needs of racial and ethnic groups with diabetes, health care professionals must acknowledge each group's attitudes, beliefs, values, and ways of being (CDC, 2011). Perceiving these cultural differences may better prepare health care professionals to understand their clients' perceptions and thinking about diabetes and how to best manage it.

The population that requires knowledge and access to diabetes programs is growing worldwide (Philis-Tsimikas & Gallo, 2014). Healthcare professionals must be able to offer information and support throughout the community where it is accessible to the population and in a format that is understood, regardless of literacy level, language, or socioeconomic status if we expect to make a difference in the incidence of diabetes and its complications.

Strategies such as explicit goal setting with patients; identifying and addressing language, numeracy, or cultural barriers to care; integrating evidence-based guidelines and clinical information tools into the process of care; and incorporating care management teams including nurses, pharmacists, and other providers have been shown collectively to optimize provider and team behavior and, thereby, catalyze reduction in HbgA1c (ADA, 2013).

Local Background and Context

The Florida county where the project took place has 14 free clinics, each with different specialties including OB-GYN, ophthalmology, and endocrinology. The study clinic is a provider of charitable health care to those individuals who have no insurance and/or meet income eligibility requirements. In addition to general health care, the clinic provides acute and chronic care of adult patients and referrals for specialty care, sexually transmitted disease testing, smoking cessation classes, and diabetes education classes. All services are free to those who qualify and are provided by local professional volunteers who are committing their time to help those in need. There may be a separate expense at a local pharmacy for prescribed medications; however, providers do their best to

prescribe the least expensive medications. At the time of the study, the clinic had five volunteer physicians, four nurse practitioners, three registered nurses, one case manager, one clinical manager, one social worker, and one administrator. The ADA's Standards of Medical Care in Diabetes (2013) recommends that patients with diabetes follow a plan of care that includes lifestyle changes (diet modification, regular exercise, smoking cessation); blood glucose control (A1C, serum glucose) medication adherence; regular clinical appointments; and self-management support and education.

Role of the DNP Student

My role, as the DNP student in this project, was to analyze the cultural significance in the delivery of care for the Hispanic population in the Florida clinic. There was a language barrier between medical staff when providing diabetes education and instructions to the patients in English when patients/family members were expecting or wanting the communications in the patient's native language. Changes in delivered language had been shown to improve the patients' outcomes in other settings (Fernandez, 2010). Developing the ability to engage healthcare workers in practice to address healthcare needs for this community, I aimed to become a leader and patient advocate and to learn and pass along the meaning and importance of adapting national guidelines for patient education strategies. I advanced my own nursing practice for the welfare of the Hispanic population of this and future communities.

Role of the Project Team

According to the ADA's Standards of Medical Care in Diabetes (2013), achieving adequate glycemic control requires behavioral changes to increase activity levels, change

eating patterns, comply with medication regimens, perform self-monitoring of blood glucose, and monitor carbohydrate intake. An explanation of how such behavioral changes require self-efficacy and self-care management was appropriate. The team was able to provide the patients the Diabetes education in their native language so the patient had the opportunity to ask questions, talk about other complications and express their feelings regarding the condition. It was noticed at the end of the project that better provider-patient communication, participation and social support, were associated with performing improvement on self-efficacy and diabetes self-care behaviors (Beckerle & Lavin, 2013); these behaviors were directly linked to good glycemic control and outcomes.

The project clinic staff helped to create partnerships between the healthcare providers and the Hispanic community. The clinic staff was an important part in the project success and completion. They communicated the project goals to the clinic's stakeholders, sponsors, and patients. Their participation supported the purpose of the project and helped implement the DSME program as a new initiative for the facility. The staff motivated patients to participate and gave of their time and knowledge to ensure positive patient outcomes.

For those who do not speak English, efforts should always be made to provide assistance, such as offering appropriately trained interpreters and written translations of forms and patient education materials (Washington State Department of Health, 2010). In some circumstances, federal and state laws and regulations impose responsibilities on health-care providers to accommodate individuals with limited English proficiency

(Chen, Youdelman & Brooks, 2008). Staff members were in charge of the appropriate measures for overcoming communication barriers depending on the circumstances of the individual practice and the patient population (O'Daniel & Rosenstein, 2008). For this project, I retrieved educational materials in the Spanish language from the Florida Health Care Plans, the Florida Health Department, and the ADA websites.

Summary

The project team recognized gaps in the delivery of diabetes healthcare service to Hispanic patients in the clinic practice. The staff identified that most of the patients' outcomes on a routine visit are subject to patient understanding and engagement with the condition. The staff also identified the lack of patient self-management skills and the potential influence of a culturally diverse education and a systematic approach to diabetes education from the primary care team. The overall scope and purpose for the ADA DSME program are clearly defined to disseminate the best evidence to the healthcare community charged with the management of patients who currently have, or are at risk for, diabetes mellitus (ADA, 2013). Therefore, I selected the DSME program and measurement instruments for self-management and self-efficacy for use in this interventional project to improve diabetes control in Hispanic patients. In Section 3, I will discuss the question addressed by the project, the sources of evidence for the project, and the methods used to analyze the evidence.

Section 3: Collection and Analysis of Evidence

Introduction

The purpose of this project was to improve diabetic care and outcomes among the Hispanic adults with diabetes in a Florida clinic through the implementation of the ADA DSME program in the Spanish language. I expect an increase in patient self-efficacy and self-management through the implementation of the DSME to lead to improved patient outcomes through better management of their diabetes. In Section 3, I will present the clinical practice-focused question and describe the sources evidence that supported the project.

Practice-Focused Question

The practice-focused question that I developed to guide this study was: Does implementation of the DSME with Spanish-speaking nurses among a sample of Hispanic patients with diabetes improve self-efficacy and self-management among these patients? The project question that includes population, intervention, comparison, outcome and time frame broken down into the (PICOT) format is:

- Population: Hispanic adults 18 to 65 years of age
- Intervention: Education of patients by bilingual staff using the ADA DSME Program
- Comparison: Current diabetes mellitus standard of care in the clinic with any available provider
- Outcome: Improve self-efficacy and self-management in diabetes care
- Time: 12 weeks

Sources of Evidence

I used two sources of evidence in this project. First, I conducted a review of the literature to determine current best practices related to diabetes self-care for Hispanic patients. Second, data were collected from a sample of volunteer Hispanic clinic patients to determine if implementation of the DSME program resulted in increased patient self-efficacy and self-management.

Published Outcomes and Research

The search terms I used in the literature review were: *diabetes mellitus, Hispanic diabetic population, self-efficacy, and self-management and the Hispanic diabetic population, diabetes education programs, chronic diseases in the Hispanic population,* and *diabetes self-care programs*. The databases searched were the following: Medline, National Center for Biotechnology Information, U.S. National Library of Medicine, CDC, ADA, and the Washington State Department of Health. Multiple articles related to diabetes were retrieved. I used a total of 27 articles in the literature review. These articles were selected based on their specific relevance to this project and the study population of Hispanic adults with diabetes.

Cohort and descriptive studies have clearly established the role of language difficulties (reading, speaking, and understanding) as a precursor to poor disease self-management. Research findings demonstrated that language has an especially strong bearing on future trends in Hispanic health (ADA, 2014; Anderson & Christison-Lagay, 2008; Beckerle & Lavin, 2013). These articles reinforced the importance of diabetic

education provided in the patient's native language to improve self-management and increase self-efficacy.

A healthcare provider and patient need to be able to communicate as freely as possible. It is the responsibility of healthcare professionals to ensure that consultations are understood, and they should do their best to use effective, professional translation services if care cannot be provided in the patients' native language (Rice, 2014). Various options may be available to clinic practices to improve language capability, including hiring bilingual staff for clerical or medical positions, using appropriate community resources, or using translation telephone services (U.S. Department of Health and Human Services, 2001). Cosponsoring health fairs or information sessions in the local cultural community center can engender good relations with health care providers while being informative as well (Kramer et al., 2011).

Ethnic groups maintain their cultural individuality through their values, practices, mores, foods, and beliefs. Culture dictates how an individual defines health, recognizes illness, and seeks treatment (ADA, 2009). Each culture has practices, beliefs, and values about good health and disease prevention (ADA, 2009). The care and treatment sought, who to consult when ill, and the social roles of the client or patient and healthcare professionals are related to the person's cultural attitudes (Sucher & Kittler, 2007).

To combat the growing diabetes epidemic, it is important that barriers to self-management be overcome. Diabetes self-management interventions must be developed and tested to meet the needs of all patients, particularly underserved minority populations. Hispanic patients in the United States have nearly two times the prevalence

of Type 2 diabetes as non-Hispanic Caucasians (ADA, 2014). In addition to higher prevalence, patients with diabetes from ethnic and racial minorities have higher rates of mortality and higher rates of diabetic complications (ADA, 2012). Although the pathophysiology and treatment may be the same for different ethnic and racial groups, differences in behaviors, cultures, and health beliefs have a significant impact on how patients understand their illness and engage in self-management (Anderson, 2008). Programs that account for these differences and address them in a culturally-sensitive and language congruent manner can improve diabetes outcomes (ADA, 2011).

Studies on the effect of diabetes in the daily lives of the Hispanics in Florida have emphasized the necessary and difficult lifestyle changes. Hispanics noted difficulties in adapting their diet to the requirements of the disease and physicians' orders in a family context because it required them to eat differently from the family and to give up traditional foods (Caprio et al., 2008). A desire to act and feel normal led Hispanics to override self-care practices in favor of maintaining social roles (Chesla et al., 2000).

According to the U.S. Department of Health and Human Services Office of Minority Health (2001), the increasing prevalence of diabetes in the Hispanic population, growing health disparities, and a shortage of bilingual and culturally-trained healthcare providers underscored the need for trained community healthcare professionals to provide economically-sustainable and culturally-relevant services. Clinical practice that attends to the language needs, health care concerns, and cultural experiences of individuals with diabetes from diverse ethnic groups is warranted and results from the DSME program have demonstrated both increased self-efficacy and increased self-management by adult

participants with diabetes. According to Escarce and Kapur (2006), the health of a population is influenced by both its social and its economic circumstances and self-management is a crucial element of good care.

Published outcomes

Several large-scale trials have demonstrated that comprehensive interventions that include self-management can prevent complications from Type 1 and Type 2 diabetes (Anderson & Christison-Lagay, 2008). In addition, interventions such as new diabetic education programs, which promote the adoption of healthy behaviors, have been shown to prevent or delay significantly the onset of Type 2 diabetes in patients at increased risk for this disease (Anderson & Christison-Lagay, 2008). A review and meta-analysis of self-management interventions for diabetes concluded that although education alone does not lead to improved outcomes, self-management interventions can improve glycemic control (Anderson & Christison-Lagay, 2008). However, "real-world" settings face challenges when seeking to replicate self-management programs such as those found in clinical trials (Anderson & Christison-Lagay 2008). Such interventions are resource intensive and not generally designed to meet the needs of patients from underserved populations (Anderson, 2008). Issues, such as low literacy and limited English proficiency, affect the way health care services are received and perceived (The Joint Commission, 2007).

The low average socioeconomic status of Hispanics, compared with non-Hispanic Caucasians, is reflected in their family income, educational attainment, occupational characteristics, and asset accumulation (Escarce & Kapur, 2006). The low average

income and educational attainment of Hispanics are obstacles to receiving timely and appropriate health care. Low-income people are less able to afford the out-of-pocket costs of care, even if they have health insurance coverage (Escarce & Kapur, 2006). Low education may impair people's ability to navigate the complex health care delivery system, communicate with health care providers, and understand providers' instructions (Escarce & Kapur, 2006). In addition, Hispanics' low incomes and occupational characteristics are associated with low rates of health insurance coverage (Ku, 2006). Lacking health insurance makes the costs of health care services prohibitive for many people and is the most important barrier to adequate health care access (Escarce & Kapur, 2006).

According to Ku (2006) specific features of the Hispanic population that affect their access to health care include degree of acculturation, language, and immigration status. More than two-fifths of Hispanics in the United States are foreign-born, and many are recent immigrants who retain their cultural beliefs and behaviors regarding health and health care (CDC, 2008). The jobs available to recent and undocumented immigrants who lack proficiency in English are unlikely to provide health insurance as a benefit of employment (Escarce & Kapur, 2006).

Furthermore, under recent legislation, recent immigrants and noncitizens may receive fewer benefits than earlier immigrants and citizens from public health insurance programs (Ku, 2006). According to Escarce and Kapur (2006), the causes of low health insurance coverage among Hispanics are multiple and complex. Hispanics are much less likely than non-Hispanic Caucasians to receive health insurance as a benefit from an

employer, which is the most common source of health insurance coverage for working-age adults and their children in the United States (Hayes et al., 2015). The Hispanic population can participate in any Free Clinic across the United States to received free services without legal documents and providing specialty services without cost or at low cost to the patient (Fabi, 2014). Requirements for qualification are that the patients need to be at or below 200% of the national poverty guideline (FamiliesUSA.org, 2016) Public health insurance programs for low-income people, such as Medicaid and the State Children's Health Insurance Program, provide health insurance coverage to many low-income Hispanics (Escarce, 2006). Nonetheless, these programs are not sufficient to close the health insurance gap between Hispanics and non-Hispanic Caucasians (Escarce & Kapur, 2006).

Hispanics face a variety of financial and nonfinancial barriers to obtaining appropriate and timely health care. Degree of acculturation, language, and immigration status all directly affect access to care (Ku, 2006). Recent arrivals to the United States are likely to be isolated from mainstream United States society and to be unfamiliar with the U.S. health care system, a situation that may interfere with obtaining appropriate and timely care (Anderson & Christison-Lagay, 2008). Although evidence-based practice guidelines for diabetes have been widely disseminated, many physicians and nurse practitioners fail to implement them (Larme & Pugh, 2001). However, health professionals stress that contextual factors are more important barriers to optimal diabetes care than provider knowledge and attitudes (International Council of Nurses, 2012). These findings indicated the need for provider education in using national diabetes

guidelines and the DSME Program and the need to verify provider skills related to delivering the education. Each of the clinical recommendations included in the ADA Standards of Medical Care for Diabetes is based on scientific findings and reports evidence strength (ADA, 2015). The guidelines are helpful in identifying patients at risk for diabetes complications, providing patients with access to care, coordinating services, assessing outcomes, identifying social and environmental barriers for self-management, identifying resources, and tracking patient progress (ADA, 2016).

Although education is considered an integral part of diabetes management, it remains low in the practical priorities of clinicians (ADA, 2015). The ADA provides education and describes research, technology, medications, advances, and opportunities for the diabetic population through a frequently updated website (ADA, 2016). Education by itself is more than simply offering information to people (even in a troubled context) and its infrequent incorporation in practice contradicts resource efficiency (ADA, 2011). Improved clinical diabetes care and increased patient knowledge and treatment satisfaction reduced health-adverse culture-based beliefs among underserved and underinsured populations with diabetes (Philis-Tsimikas et al., 2004). It was notable the positive outcome and that a novel, culturally-appropriate, community-based, nurse case management/peer and healthcare provider-delivered education using the ADA DSME led to significant improvement in clinical diabetes care, self-awareness, and understanding of diabetes in underinsured populations (Mainous et al., 2007).

The National Standards for the DSME Program were designed to define quality diabetes self-management education that can be implemented in diverse settings and to

facilitate improvement in health care outcomes (ADA, 2012). The dynamic nature of the healthcare system obligates the diabetes patient advocacy community to review and revise these standards periodically to reflect advances in scientific knowledge and health care; rates of poverty and cultural differences present additional barriers to promoting diabetes self-management (Anderson & Christison-Lagay, 2008).

Self-efficacy and self-management

Self-efficacy and self-management are crucial elements of good diabetes care. Several large-scale trials have demonstrated comprehensive interventions that include self-management can prevent complications from Type 1 and Type 2 diabetes (Anderson & Christison-Lagay, 2008). In addition, interventions that promote the adoption of healthy behaviors have been shown to prevent or delay the onset of diabetes in patients at increased risk for this disease (ADA, 2009). A review and meta-analysis of self-management interventions for diabetes concluded that, although education alone does not lead to improved outcomes, self-management interventions can improve glycemic control (Anderson & Christison-Lagay, 2008). Successful daily self-management of diabetes is essential to the achievement of positive health outcomes. Basic to successful self-management of any disease is a sense of self-efficacy or the feeling of confidence in one's self-management abilities (Moore & Lavin, 2013).

According to Lorig, Ritter, and Jacquez (2005), self-efficacy was associated with better self-management behaviors in vulnerable populations, across both race/ethnicity and health literacy levels. However, the magnitude of the association suggested that, among diverse populations, further study of the determinants of and barriers to self-

management was warranted. Because diabetes self-management incorporates behavioral, personal, and environmental factors into daily performance of recommended activities, the concept of self-efficacy is relevant for improving self-management. Although a few recent studies have addressed selected racial/ethnic minority populations, little is known about the applicability of self-efficacy research to ethnically diverse and low-income patients with diabetes (ADA, 2013). In these communities, access barriers, costs of treatment, and cultural beliefs may be key determinants of self-management behavior. To the extent that these factors contribute to high rates of failed attempts at self-management and lack of modeling of successful behaviors, they may also be critical to understanding a lowered self-efficacy perception (Lorig, Ritter, & Jacquez, 2005).

Anderson and Christison-Lagay (2008) reported that training staff in the methodology of self-management promotion proved more challenging than expected. Medical staff, including nurses, nutritionists, and diabetes educators, tended to lapse into a "didactic mode" and assume a more prescriptive manner unless they received frequent education, support, and review of their provision of diabetes education. The project coordinator in the Anderson and Christison-Lagay study received "master trainer" instruction in self-management and subsequently became the trainer for the clinic employees participating in the project. Nurses from all primary care sites then received a half-day session on self-management goal setting. In three sites, nurses received additional follow-up training, which included a review of goals facilitated with patients. The articles selected improved the confidence on the participating staff. The DSME program among the Hispanic patients, the ADA guidelines, and Bandura's self-efficacy

theory formed the framework that supports this project and were much needed to support the continuous and efficient engagement between patients and family members and volunteer staff/healthcare providers.

Evidence Generated for the Doctoral Project

Participants. The participants for this study included 25 Hispanic diabetic male and 25 female patients 18 to 65 years of age, who were newly and previously diagnosed with diabetes type 1 or type 2 and who were willing to participate in the diabetes education provided in their native language. The clinic administrator generated a list of the patients interested in participating in the project. Participants were informed of the reasons for the project and the importance of their participation to provide feedback regarding the implementation of the self-management diabetes program at the clinic.

Procedures. The clinic administrator randomly selected the 25 diabetic male and 25 diabetic female patients who expressed interest in participation using a raffle-type drawing. The randomly selected participants were supplied with a written consent form and authorized the clinic and me to use their information as a part of a scholarly project. The project was conducted to determine the effects of the DSME program in Spanish for native Spanish speakers on understanding and managing a diabetes diagnosis. The DSMQ was designed to assess self-care behaviors and this questionnaire was chosen for use in the project because it was developed to assess self-care behaviors known to affect HgbA1c values (Schmitt et al., 2013). It was developed based on theoretical considerations and a process of empirical improvements. The overall internal consistency (Cronbach's alpha) of the scale was good (0.84), consistencies of the subscales were

acceptable (-glucose management = 0.77), (dietary control = 0.77), (physical activity = 0.76) and (healthcare use = 0.60). Schmitt et al. (2013) found reliability testing revealed good internal consistency of the "Sum Scale" and acceptable consistencies of the subscales. After obtaining the results I noticed the increment in knowledge from the participating patients.

The DSES was used to measure the self-efficacy of the patient sample. Lorig et al. (2009) reported an internal consistency reliability of .828. A Spanish version of the questionnaire was developed and tested for these authors' Diabetes Self-Management study. Psychometrics demonstrated that the DSES had good internal reliability, internal consistency, construct validity, criterion validity, and test-retest reliability (Sturt, Hearnshaw, & Wakelin, 2010).

In this study, the participants used a paper questionnaire to answer the DSMQ and DSES. No additional data were collected. The DSMQ and the DSES were administered prior to the education and again as a posttest at the conclusion of the class to identify any changes in responses. The classes were delivered in Spanish by the bilingual volunteer staff at the clinic. Patients had the opportunity to attend to the diabetes classes as often as needed in Spanish.

I manually transferred the responses from the questionnaires into a spreadsheet. Each question number served as a column heading and each row contained one person's answers. Each possible answer had a number or code. I went through each participant's questionnaire in turn, and added in the codes. Then, I entered these data into the spreadsheet and analyzed the data using SPSS. Data are presented as graphics, *t* test

results, and Chi square tables. The Walden University Institutional Review Board (IRB) reviewed and approved the project before any data were collected. The IRB approval number is: 03-31-16-0467399.

Analysis and Synthesis

A pretest was administered using the DSMQ questionnaire, which consists of 16 items that generate a 'Sum Scale' score as well as four subscale scores. In view of their contents, the subscales were labeled 'Glucose Management' (items 1, 4, 6, 10, 12), 'Dietary Control' (items 2, 5, 9, 13), 'Physical Activity' (items 8, 11, 15), and 'Health Care Use' (items 3, 7, 14). One item (16) requested an overall rating of self-care and was included in the 'Sum Scale' only (Schmitt et al., 2013). The full questionnaire (in English) is displayed in Appendix A (the full questionnaire in Spanish was provided to the participants). Seven of these items are coded positively ['Dietary Control' (items 2, 5, 9, 13) and 'Physical Activity' (items 8, 11, 15)], and nine items are reverse coded with regard to what is considered effective self-care ['Glucose Management' (items 1, 4, 6, 10, 12), 'Health-Care Use' (items 3, 7, 14), and one item (16)].

Scale scores were calculated as sums; a higher score indicated better self-management and increased understanding of self-management needs. A figure for each question is presented to display the response and correlating value, the number of participants for the pretest and posttest on each response, as well as the calculated score of the response for the pretest and posttest responses (see Appendix C). The numerical scores were used to conduct a statistical analysis to determine whether there was a significant change from the pretest to the posttest scores.

A Chi-square statistic was used to determine if there was a statistically significant difference between the pretest and posttest answers for each question after the education in Spanish. The *p* value was set at .05 a priori. The Expected number was calculated by total *n* = 50 participants multiplied by the number of answers for the question divided by the *n* for pretest and posttest (100). The 8-item DSES was also completed by the project participants before and after the DSME program. The full questionnaire is displayed in Appendix B. A paired *t* test was conducted to determine whether pretest to posttest means were statistically different.

Summary

The literature review included articles on self-efficacy and self-management evidence for the Hispanic diabetic population. The literature described the importance of language congruency and understanding of health disparities of patients seen at the healthcare encounter. Analyzing information involves testing in ways that reveal the relationships, patterns, and trends. The ADA (2012; 2013; 2014) reviewed aspects of self-management and self-efficacy orientation programs and recommended that interventions for patients with diabetes should focus on enhancing self-efficacy, problem-solving, and social-environmental support to improve self-management of diabetes (ADA, 2012).

Barriers to optimal care for Hispanic patients exist on multiple levels and are interrelated in a complex manner. Examples include time constraints and the economics of the private practice setting, the need to maintain referral relationships, misdistribution of professionals in the practice community, lack of Spanish-speaking providers, low

diabetes awareness, low socioeconomic status among patients, lack of access for low-income patients, low provider reimbursement for education, and insufficient focus on prevention in the U.S. health care system (Larme & Pugh, 2001). I implemented this DNP project to determine if clinic staff educated to use the ADA guidelines and the DSME program would improve self-efficacy and self-management of diabetes among a sample of Hispanic patients in a Florida free clinic. Two quantitative instruments (the DMSQ and the DSES) were used to collect data regarding pretest and posttest education self-efficacy and self-management of the project participants. In Section 4, I will present the findings of the study and provide recommendations for additional solutions to address the gap-in-practice related to Hispanic adult patients with diabetes.

Section 4: Findings and Recommendations

Introduction

National statistics continue to show rising rates of diabetes among Hispanics, and the appropriate management of diabetes presents significant challenges. The DSME is essential to successful diabetes treatment and complication prevention. It is an important element of care for all people with diabetes and those at risk of developing the disease. Diabetes management requires patient knowledge and behavior change practiced on a daily basis. The aim of the project evaluation plan for this study was to determine if the education provided by nurses in the patients' native language (Spanish) improved self-efficacy and self-management of the patient's condition. I proposed the DSMQ and the DSES as part of the evaluation plan for all diabetic patients at the end of a 12-week trial of interventions. This section presents the summary and outcomes of the project, the conclusions drawn and the recommendations made as an outgrowth of this study.

Findings and Implications

DSMQ Results

The results of the pretest to posttest DSMQ sum scale, the glucose management control subscale, and the physical activity results all showed statistically significant improvement after the education intervention. Improvements were not statistically significant for Question 5 in the dietary control subscale though. I also calculated paired sample *t* tests to compare the mean pretest DSMQ sum scale ($M = 8.50$, $SD = 1.39$) to the posttest DSMQ sum scale ($M = 7$, $SD = 1.58$). This difference was statistically significant (t (5.04) = -3.46, $p = 0.001$) and the standard error of difference = from 0.9094 - 2.0906.

Paired sample *t* tests were calculated to compare the pretest to posttest scores on all the DSMQ subscales. The subscale category for glucose management skills pretest score (*M* = 5.1, *SD* = 1.77) was compared to the posttest glucose monitoring score (*M* = 7.3, *SD* = 1.28) and the difference was significant (*t* (7.12) = -2.20, *p* = 0.0001) with a standard error of difference = 0.309 (see Figure 1).

The subscale category for dietary control pretest score (*M* = 5, *SD* = 2.25) was compared to posttest dietary control score (*M* = 5.2, *SD* = 1.08), and was not statistically significant for Question 5 (*t* (0.56) = -0.2, *p* = 0.5723; see Figure 2). The pretest physical activity score (*M* = 4.22, *SD* = 1.82) compared to the posttest score for physical activity (*M* = 5.86, *SD* = 1.27) was statistically significant (*t* (5.22) = -1.64, *p* = 0.0001; see Figure 3). Finally, the pretest score for healthcare use (*M* = 4.74, *SD* = 1.38) to posttest healthcare use score (*M* = 5.9, *SD* = 1.71), was statistically significance (*t* (3.73) = 1.16, *p* = 0.003; see Figure 4). I performed a chi-square test to compare the pretest and posttest score to compute a *p* value. A significance level of 0.05 was set a priori. If the *p* value was less than 0.05, it was determined there was a significant difference between the pretest and posttest scores, thereby identifying a significant change in patient's understanding and knowledge after taking the class.

Appendix C provides an overview of DSMQ questions 1 through 16 and shows the increase in the overall scores on each question, although the differences were not statistically significant for Questions 3, 6, and 7. There is a clear increase in patient understanding and quality of self-management of care based on the increase in values comparing the pretest and posttest scores. Questions 3, 7, and 14 are categorized under

healthcare use. After the education, patients' answers better reflected the proper use of healthcare facilities as seen by the increase in answer scores, but there is room for improvement on this subscale.

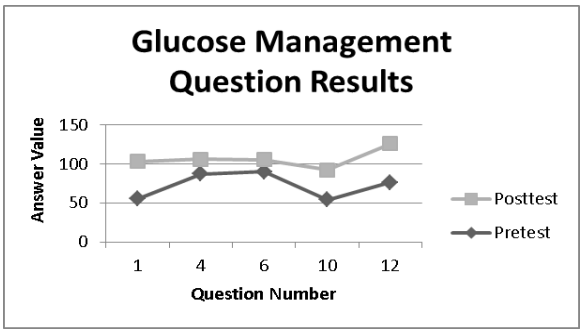

Figure 1. Glucose management

In view of their content, Questions 1, 4, 6, 10, and 12 were related to glucose management. Figure 1 displays the improvement on the glucose management subscale score from the pretest to the posttest. The subscale category for glucose management skills pretest scores was compared to the posttest glucose monitoring scores and the change in score was significant. Glucose management in general was expected to improve after the diabetes classes.

Questions 2, 5, 9, and 13 were related to dietary control. Figure 2 shows improvement on the dietary Control subscale. When the subscale category for dietary control pretest scores were compared to posttest dietary control scores, a statistically significant change was not found. This finding is most likely a result of the lack of any change in score on the question: "Occasionally I eat lots of sweets or other foods rich in

carbs." Most of the participants didn't have the knowledge about food categories and their importance.

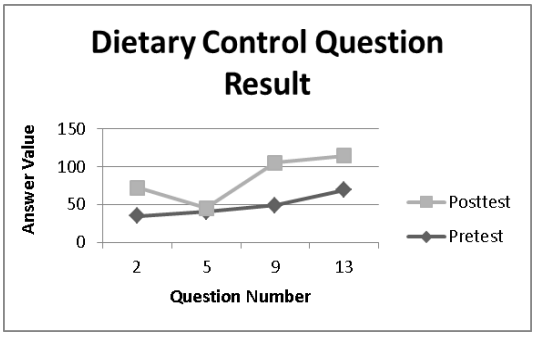

Figure 2. Dietary control

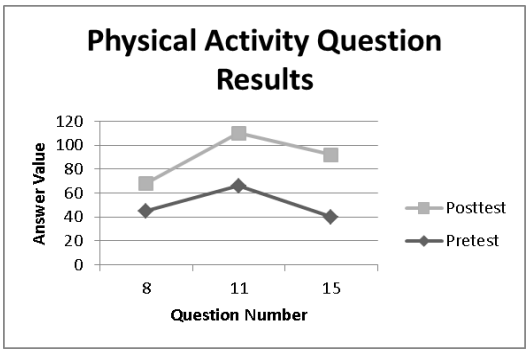

Figure 3. Physical activity.

Figure 3 shows the questions that specifically targeted physical activity. The physical activity subscale included Questions 8, 11, and 15. There was an increase on all three of the questions when comparing the pretest to posttest scores. This difference was statistically significant. Most of the participants didn't relate the physical activity, glucose control and dietary control until after the classes where they learn every subscale importance.

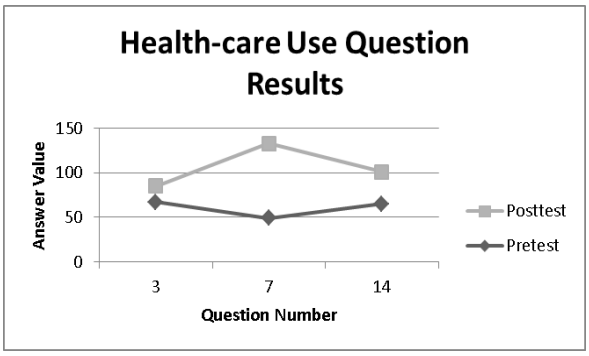

Figure 4. Health care use.

Questions 3, 7, and 14 are categorized under health care use. After the education, there was a significant increase in the health care use subscale scores. Although the posttest scores were significant better than the pretest scores, I believe that reinforcing the education in their native language will improve significantly their individually condition outcomes.

DSES Results

Diabetes education is concerned with prompting independence and confidence so that people can carry out their self-care activities. Participants reported that carrying out their self-management program was even more difficult than dealing with the diagnosis of diabetes. Self-efficacy is described as a belief in one's capabilities to organize and execute courses of action required to meet given situational demands (Moore & Lavin, 2013). Self-efficacy is believed to be specific to areas of life and setting and not related to a generalized feeling of success or control (Bandura, 1994). The DSES asked participants about their belief in the importance of an activity and about how confident they were that they could carry out that activity.

The DSES (see Appendix B) measured the participants' sense of self-efficacy in implementing self-care for diabetes (Roblin, Little & McGuire, 2004). There was a statistically significant increase in self-efficacy scores related to being able to take action on diabetes management, while belief about the importance of diabetes care remained strong, although stable as expected. Figure 5 shows the self-efficacy reported by participants before the diabetes education program.

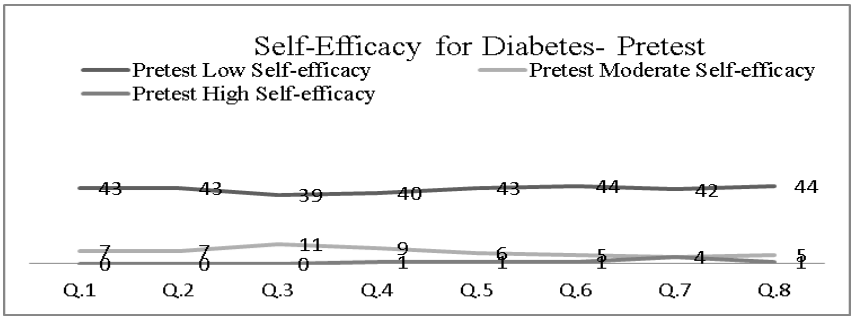

Figure 5. Self-efficacy for diabetes pretest scores.

Figure 6 shows participants' self-efficacy regarding their diabetes condition and management after the diabetes education program participation. Some participants' scores declined from pretest to posttest, probably due to increased knowledge about the self-management necessary for patients with diabetes.

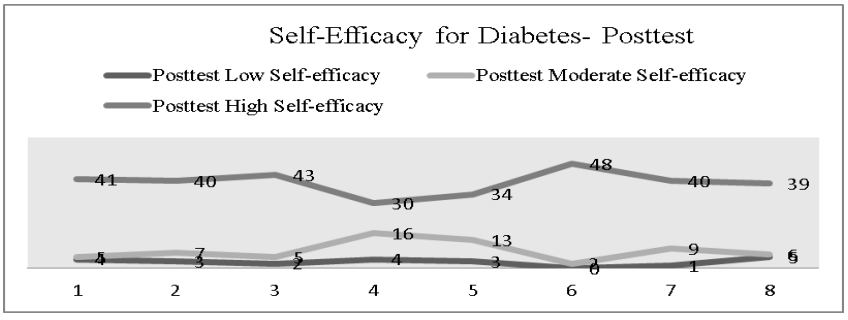

Figure 6. Self-efficacy for diabetes posttest scores.

Figure 7 shows the pretest and posttest mean and standard deviation for the patient sample (n = 50). The results of the DSES pretest to posttest questionnaire scores showed that the 50 individuals who participated in the diabetes classes in their native language felt more confident about the management and knowledge regarding to diabetes at a p level of 0.10. This no significant finding demonstrated that there is room for improving self-efficacy among participants in the diabetes education program.

Total of participants ***Pretest***	Observed Range	*M* (Average)	*SD*
n=50	1–10	2.92	1.38269
Posttest			
n=50	1–10	6.4	2.41

Figure 7. Mean and standard deviation on the DSES.

Recommendations

I used the findings of the project evidence, along with input from the clinic's advanced practice nurse and physician, to recommend specific interventions. The current clinic approach to the management of diabetes includes a patient-provider face-to-face visit every 3 months. Based on the study's findings, I provided my recommendation to increase patients' follow-up visits to every 2 months. The staff nurses can review the material used to give the diabetes class and create a "Question and Answer" educational handout for patients and go over medications and signs and symptoms to watch for in a 15 to 20-minute appointment time slot. A face-to-face encounter with a diabetes educator or DSME-trained nurse at least twice a month for blood glucose log monitoring, diet and

weight control, and physical activity was also recommended. It would also be a good idea for the healthcare providers to meet twice a month to discuss patients' outcomes and formulate a multidisciplinary plan of care for each patient to improve outcomes.

Based on the literature reviewed, I recommended frequent training and evaluation of the application of interventions to increase patient self-efficacy and self-management. This method is simple, practical, noninvasive, and an inexpensive way to identify knowledge and efficacy related to their diagnosis of diabetes. Findings can guide individual and group education to improve knowledge and self-efficacy.

With the increasing prevalence of diabetes in the Hispanic population, it was important to introduce the factors that most directly affect outcomes. Diabetes education has not consistently resulted in improved glycemic control; new concepts are needed to help patients to change self-management behaviors (Klein et al., 2012). I would encourage every healthcare professional at the clinic to participate in outreach the Hispanic population. Finally, I believe evaluation is meant to be useful to those implementing a project. I will use the findings of the pre- and post-education pilot study to develop and recommend specific interventions and plan an evaluation of their usefulness in educating the patients for better diabetes-related outcomes.

The DSMQ (see Appendix A) and the DSES (see Appendix B) can be used to help clinic staff identify patients who may be at a higher risk for developing adverse outcomes of diabetes due to lack of self-management knowledge necessary for glucose control and self-efficacy deficits. These patients may need to have their level of risk further investigated and their education targeted to their needs. Despite the benefits of

diabetes education, many Hispanic patients cease self-management when they are given instructions in a language they do not totally understand and which does not adequately prepare them to feel capable enough to continue the self-management of care.

To ensure that the outcomes from this project continue to inform practice and maximize the benefits to patients at the clinic, the following dissemination strategy was developed using evidence for translating knowledge into practice (Abrahamson, 2012). Written feedback was given to healthcare providers at the clinic. In addition, dissemination activities included scheduling interactive workshops across the Florida Free Clinics to encourage implementation of the DSME program for the Hispanic patients in all the clinics.

Contribution of the Project Team

When you get in the healthcare environment, it's more and more evident that working as a team causes the largest changes in outcomes for patients. True collaboration was received by the participating team. They engaged their time and expanded their knowledge for both a foreign language and diabetes education, creating a collaboration culture and share equal accountability of the level of integrity and respect they gave to each individual. An integrated effort to continue with the diabetes education, monitoring and management at the clinic would enable the establishment of modifiable, safest, cost-effective and comprehensive methods to continuing treatment and care of the Hispanic population in the community.

Strengths and Limitations of the Project

The completion of the project allowed me to help create a diabetes program at the clinic. Volunteer staff members were involved and engaged with the education and the project process. It will help future clinic diabetic patients due to the extensive material and resources found while conducting the literature review for the project. Although this project was completed and was carefully prepared and reviewed, I am aware of limitations and shortcomings. First, this project was conducted with a small sample of the Hispanics with diabetes in the community; only those patients who regularly attend the clinic, provided consent, were selected to participate in the random drawing, and completed the needs/behavior assessment (DSMQ and DSES) were included in the DSME program. Finally, the lack of Spanish-speaking healthcare providers at some point discouraged patients' interest and motivation in diabetes self-management.

Summary

Overall, the data from the pretests and posttests on the DSMQ indicated that there was an increase in understanding and self-care management of diabetes after the education. The last question is a summation of the project goal; it asks patients to choose a response to the question "My diabetes self-care is poor" that most describes them. On the pretest none of participants chose the response "Does not apply to me," whereas on the posttest 49 of the 50 participants answered "Does not apply to me." Subjective information given by patients after the educational class confirmed the data that they had a better grasp of their diabetes diagnosis and how to manage the disease.

The DSES results showed that patients' beliefs are specific to behaviors and the situation in which they occur, affecting the course of action. Self-efficacy is a productive, unpredictable belief, which may be intensified by behavioral mediations, resulting in an enhanced desire for behavioral change attempts. There is room for improvement in the DSES scores. The results of the project will be disseminated to the clinic manager and administrator. They will use the information to request government and stakeholders sponsorships and improve the effort across the healthcare providers to enhance the Hispanic diabetic patient reflection, care and clinic experience.

Section 5: Dissemination Plan

Introduction

With so many advances in treatments and technologies for patients with diabetes, managing the condition has become increasingly complex for both patient and provider. Because of the serious complications that may ensue when glycemic targets are not achieved (Debling, 2006), nurses often have the challenging task of translating a treatment regimen into a plan of care that a patient can follow. The Hispanic population often experiences the worst health outcomes among racial/ethnic groups (Escarce & Kapur, 2006).

Therefore, my aim with this project was to increase self-efficacy and self-management in a Hispanic patient sample by engaging the nursing staff to be more involved in working with diverse patients, in this case Spanish speakers, through training and education using cultural sensitivity and effective communication skills and a national education program, the ADA DSME. Engaging nurses in increasing patient self-efficacy and culturally-sensitive patient care demonstrated to patients and their family members the importance the clinic places on the specific health needs of Hispanic patients and, more specifically, their need to learn diabetes self-management practices. The goals of dissemination are utilization and implementation the steps necessary to increase awareness levels from whoever is going to benefit from the research outcomes.

Dissemination Plan

The products that I developed from the project included best practice guidance and transferable recommendations to improve the diabetes management at the clinic. The

results of the self-management changes after the diabetes education delivered in Spanish to the participating patients were presented orally to staff members using a PowerPoint Presentation (see Appendix D). I am planning on publishing my findings in academic journals and writing research summaries for professionals. I hope to publish in the following journals: *Endocrinology and Metabolic Syndrome, Archivos de Medicina* (Spanish), and *La Prensa Médica* (Spanish).

Self-Analysis

As a DNP graduate, I will disseminate the findings from this project and will incorporate strategies to improve facilitators and decrease barriers for incorporating national guidelines into diabetes management for Spanish-speaking patients. I will lead a multidisciplinary committee for diabetes management at the study clinic and will encourage all healthcare providers and volunteers to participate on this committee. Through a multidisciplinary approach, committee members will bring their professional perspectives to improve diabetes education and management for the Hispanic patients of the clinic.

A method to provide feedback to providers whose patients have recurrent hyperglycemia or hypoglycemia will be developed in an effort to increase usage of the guidelines and improve outcomes. In addition, I will work with nursing management and the clinic administrator to continue with the diabetes mentoring program, which will include a diabetes education workshop for staff and volunteer nurses and healthcare providers that will focus on both basic management and self-efficacy. I will also propose written Spanish patient education information that explains the management of diabetes

and the importance of dietary adherence for proper care. After completing the whole process of preparation, research, investigation, implementation, data collection, and dissemination in the project, my learning goal was met.

I proposed a learning plan that included an opportunity to develop and then excel at using my skills as a Doctor of Nursing Practice student. I could demonstrate advanced levels of clinical judgment with the adult Hispanic diabetic population of the clinic. I integrated knowledge of the basic and nursing sciences, ethics, and law and practiced psychosocial, cultural, and communication skills. I translated research and health care delivery best practices into clinical practice for the clinic staff focused on the diabetic adult Hispanic population.

I had the opportunity to collaborate with intra professional and inter professional groups in the community to address the major health challenges of this population. I used a variety of problem-solving tasks that involved strategies to address professional practice, inquiry, analysis, assessment, planning, and implementation. The practicum experience will be part of my personal curriculum because I could develop more educational and teaching skills and strategies for diabetes mellitus patients who are Spanish speaking. It was a perfect setting to address issues, concerns, and challenges.

Summary

The management of diabetes and achievement of blood glucose goals for Spanish-speaking patients is complex due to numerous variables, including language and cultural disparities. National guidelines with an intra-professional approach have been developed and include blood glucose goals as well as the use of scheduled basal and pre meal

insulin dosing (ADA, 2006). Overcoming the barriers and cultivating the facilitators to change can improve care processes, provider effectiveness, and patient outcomes.

This project aimed to empower the clinic nurses to implement the DSME program with Hispanic patients with diabetes to increase the patients' self-management and self-efficacy to adhere to the self-management plan. To improve the effectiveness of the diabetes self-management program and expand it beyond the current group of participants, nurses and other clinic personnel must deliver care based on best practices and embrace the social responsibility for the holistic welfare of the Hispanic population under clinic care (Peterson, Radosevich, & O'Connor, 2008). With this project, I identified areas of opportunity for additional staff and patient education as well as processes that can be improved, such as the Spanish language delivery of diet, exercise, and glucose management guidance. The project deliverables and resulting recommendations can help the clinic staff in providing organized and efficient diabetes care. The project was useful in developing content and skills for the staff members to use in conducting interactive preventive care with the key audiences of the clinic in order to influence attitudes and increase and maintain self-efficacy and self-management behavior changes among the clinic's Hispanic patient population.

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Appendix A: Diabetes Self-Management Questionnaire (DSMQ)

	The following statements describe self-care activities related to your diabetes. Thinking about your self-care over the last 8 weeks, please specify the extent to which each statement applies to you.	**Applies to me very much**	**Applies to me to a consider-able degree**	**Applies to me to some degree**	**Does not apply to me**
1.	I check my blood sugar levels with care and attention. ☐ *Blood sugar measurement is not required as a part of my treatment.*	☐3	☐2	☐1	☐0
2.	The food I choose to eat makes it easy to achieve optimal blood sugar levels.	☐3	☐2	☐1	☐0
3.	I keep all doctors' appointments recommended for my diabetes treatment.	☐3	☐2	☐1	☐0
4.	I take my diabetes medication (e. g. insulin, tablets) as prescribed. ☐ *Diabetes medication / insulin is not required as a part of my treatment.*	☐3	☐2	☐1	☐0
5.	Occasionally I eat lots of sweets or other foods rich in carbohydrates.	☐3	☐2	☐1	☐0
6.	I record my blood sugar levels regularly (or analyze the value chart with my blood glucose meter). ☐ *Blood sugar measurement is not required as a part of my treatment.*	☐3	☐2	☐1	☐0
7.	I tend to avoid diabetes-related doctors' appointments.	☐3	☐2	☐1	☐0
8.	I do regular physical activity to achieve optimal blood sugar levels.	☐3	☐2	☐1	☐0
9.	I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	☐3	☐2	☐1	☐0
10.	I do not check my blood sugar levels frequently enough as would be required for achieving good blood glucose control. ☐ *Blood sugar measurement is not required as a part of my treatment.*	☐3	☐2	☐1	☐0
11.	I avoid physical activity, although it would improve my diabetes.	☐3	☐2	☐1	☐0
12.	I tend to forget to take or skip my diabetes medication (e. g. insulin, tablets). ☐ *Diabetes medication / insulin is not required as a part of my treatment.*	☐3	☐2	☐1	☐0
13.	Sometimes I have real 'food binges' (not triggered by hypoglycemia).	☐3	☐2	☐1	☐0

	The following statements describe self-care activities related to your diabetes. Thinking about your self-care over the last 8 weeks, please specify the extent to which each statement applies to you.	Applies to me very much	Applies to me to a consider-able degree	Applies to me to some degree	Does not apply to me
14.	Regarding my diabetes care, I should see my medical practitioner(s) more often.	☐3	☐2	☐1	☐0
15.	I tend to skip planned physical activity.	☐3	☐2	☐1	☐0
16.	My diabetes self-care is poor.	☐3	☐2	☐1	☐0

Appendix B: Diabetes Self-Efficacy Scale

We would like to know *how confident* you are in doing certain activities. For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

1. How confident do you feel that you can eat your meals every 4 to 5 hours every day, including breakfast every day?

Not at all confident	1	2	3	4	5	6	7	8	9	10	Totally confident

Items (using the same format as above):

1. How confident do you feel that you can eat your meals every 4 to 5 hours every day, including breakfast every day?
2. How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes?
3. How confident do you feel that you can choose the appropriate foods to eat when you are hungry (for example, snacks)?
4. How confident do you feel that you can exercise 15 to 30 minutes, 4 to 5 times a week?
5. How confident do you feel that you can do something to prevent your blood sugar level from dropping when you exercise?
6. How confident do you feel that you know what to do when your blood sugar level goes higher or lower than it should be?
7. How confident do you feel that you can judge when the changes in your illness mean you should visit the doctor?
8. How confident do you feel that you can control your diabetes so that it does not interfere with the things you want to do?

This 8-item scale was originally developed and tested in Spanish for the Diabetes Self-Management study. It focuses on seven self-care behaviors that are important to focus on to be healthy and fully enjoy life:

•Healthy eating

•Being active

•Monitoring

•Taking medication

•Problem solving

•Healthy coping

•Reducing risks

The outcome variables will demonstrate knowledge self-efficacy and self-management practices regarding diabetes, medication management, glycemic levels and control, and possible complications. No Copyright for DSES. Research Instruments Developed, Adapted or Used by the Stanford Patient Education Research Center and the public may use any of the scales at no cost without permission.

Permission: http://patienteducation.stanford.edu/research/

Questionnaire: http://patienteducation.stanford.edu/research/sediabetes.html

Appendix C: Questions 1–16

Question 1: I check my blood sugar levels with care and attention

Question 1	**Answers**	**Observed**	**Expected***	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	14	20	-6	36	1.8
	Applies to me to a considerable degree	6	8.5	-2.5	6.25	0.7352941
	Applies to me to some degree	1	2	-1	1	0.5
	Does not apply to me	29	19.5	9.5	90.25	4.6282051
Post-Test	Applies to me very much	26	20	6	36	1.8
	Applies to me to a considerable degree	11	8.5	2.5	6.25	0.73529411
	Applies to me to some degree	3	2	1	1	0.5
	Does not apply to me	10	19.5	-9.5	90.25	4.6282051
	Chi (*p*)	**0.032028885**				
		$p < 0.05$				

Question 2: The food I choose to eat makes it easy to achieve optimal blood sugar levels

Question 2	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	4	8	-4	16	2
	Applies to me to a considerable degree	7	8	-1	1	0.125
	Applies to me to some degree	9	13.5	-4.5	20.25	1.5
	Does not apply to me	30	20.5	9.5	90.25	4.402439024
Post-Test:	Applies to me very much	12	8	4	16	2
	Applies to me to a considerable degree	9	8	1	1	0.125
	Applies to me to some degree	18	13.5	4.5	20.25	1.5
	Does not apply to me	11	20.5	-9.5	90.25	4.402439024
	Chi (*p*)	**0.024619689**				
		$p < 0.05$				

Question 3: I keep all doctors' appointments recommended for my diabetes treatment

Question 3	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	11	13.5	-2.5	6.25	0.462962963
	Applies to me to a considerable degree	9	10.5	-1.5	2.25	0.214285714
	Applies to me to some degree	16	13	3	9	0.692307692
	Does not apply to me	14	13	1	1	0.076923077
Post-Test:	Applies to me very much	16	13.5	2.5	6.25	0.462962963
	Applies to me to a considerable degree	12	10.5	1.5	2.25	0.214285714
	Applies to me to some degree	10	13	-3	9	0.692307692
	Does not apply to me	12	13	-1	1	0.076923077
	Chi (*p*)	**0.894724633**				
		$p > 0.05$				

Question 4: I take my diabetes medication as prescribed

Question 4	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	14	17	-3	9	0.529411765
	Applies to me to a considerable degree	15	16.5	-1.5	2.25	0.136363636
	Applies to me to some degree	15	12.5	2.5	6.25	0.5
	Does not apply to me	6	4	2	4	1
Post-Test:	Applies to me very much	20	4	16	256	64
	Applies to me to a considerable degree	18	12.5	5.5	30.25	2.42
	Applies to me to some degree	10	16.5	-6.5	42.25	2.560606061
	Does not apply to me	2	17	-15	225	13.23529412
	Chi (*p*)	**0.004319916**				
		$p < 0.05$				

Question 5: Occasionally I eat lots of sweets or other foods rich in carbs

Question 5	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	14	17	-3	9	0.529411765
	Applies to me to a considerable degree	15	16.5	-1.5	2.25	0.136363636
	Applies to me to some degree	15	12.5	2.5	6.25	0.5
	Does not apply to me	6	4	2	4	1
Post-Test:	Applies to me very much	20	4	16	256	64
	Applies to me to a considerable degree	18	12.5	5.5	30.25	2.42
	Applies to me to some degree	10	16.5	-6.5	42.25	2.560606061
	Does not apply to me	2	17	-15	225	13.23529412
	Chi (*p*)	**0.004319916**				
		$p < 0.05$				

Question 6: I record my blood sugar levels regularly

Question 6	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	15	18	-3	9	0.5
	Applies to me to a considerable degree	21	18.5	2.5	6.25	0.337837838
	Applies to me to some degree	3	6.5	-3.5	12.25	1.884615385
	Does not apply to me	11	2	9	81	40.5
Post-Test:	Applies to me very much	21	2	19	361	180.5
	Applies to me to a considerable degree	16	6.5	9.5	90.25	13.88461538
	Applies to me to some degree	10	18.5	-8.5	72.25	3.905405405
	Does not apply to me	3	18	-15	225	12.5
	Chi (*p*)	**0.894724633**				
		$p > 0.05$				

Question 7: I tend to avoid diabetes-related doctors' appointment

Question 7	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	14	17	-3	9	0.529411765
	Applies to me to a considerable degree	15	16.5	-1.5	2.25	0.136363636
	Applies to me to some degree	15	12.5	2.5	6.25	0.5
	Does not apply to me	6	4	2	4	1
Post-Test:	Applies to me very much	6	4	2	4	1
	Applies to me to a considerable degree	20	12.5	7.5	56.25	4.5
	Applies to me to some degree	18	16.5	1.5	2.25	0.136363636
	Does not apply to me	12	17	-7	49	2.882352941
	Chi (*p*)	**0.042985686**				
		$p > 0.05$				

Question 8: I do regular physical activity to achieve optimal blood sugar levels

Question 8	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	2	5.5	-3.5	12.25	2.227272727
	Applies to me to a considerable degree	5	8.5	-3.5	12.25	1.441176471
	Applies to me to some degree	29	23	6	36	1.565217391
	Does not apply to me	14	13	1	1	0.076923077
Post-Test:	Applies to me very much	9	13	-4	16	1.230769231
	Applies to me to a considerable degree	12	23	-11	121	5.260869565
	Applies to me to some degree	17	8.5	8.5	72.25	8.5
	Does not apply to me	12	5.5	6.5	42.25	7.681818182
	Chi (*p*)	**0.000221361**				
		$p < 0.05$				

Question 9: I strictly follow the dietary recommendations given by my doctor or diabetes specialist

Question 9	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	7	6.5	0.5	0.25	0.033561538
	Applies to me to a considerable degree	6	17	-11	121	7.117147059
	Applies to me to some degree	30	21.5	8.5	72.25	3.360465116
	Does not apply to me	7	4	3	9	2.25
Post-Test:	Applies to me very much	6	4	2	4	1
	Applies to me to a considerable degree	28	21.5	6.5	42.25	1.962116279
	Applies to me to some degree	13	17	-4	16	0.941172371
	Does not apply to me	3	6.5	-5.5	30.25	4.653246154
	Chi (*p*)	**0.003015526**				
		$p < 0.05$				

Question 10: I do not check my blood sugar levels frequently enough as would be required for achieving good blood glucose control.

Question 10	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	16	11.5	4.5	20.25	1.760869565
	Applies to me to a considerable degree	15	11.5	3.5	12.25	1.065217391
	Applies to me to some degree	18	15.5	2.5	6.25	0.403225806
	Does not apply to me	1	11.5	-10.5	110.25	9.586956522
Post-Test:	Applies to me very much	7	11.5	-4.5	20.25	1.760869565
	Applies to me to a considerable degree	8	11.5	-3.5	12.25	1.065217391
	Applies to me to some degree	13	15.5	-2.5	6.25	0.403225806
	Does not apply to me	22	11.5	10.5	110.25	9.586956522
	Chi (*p*)	**0.065752981**				
		$p < 0.05$				

Question 11: I avoid physical activity, although it would improve my diabetes.

Question 11	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	16	10	6	36	3.6
	Applies to me to a considerable degree	10	6	4	16	2.666666667
	Applies to me to some degree	16	20	-4	16	0.8
	Does not apply to me	8	14	-6	36	2.571428571
Post-Test:	Applies to me very much	4	10	-6	36	3.6
	Applies to me to a considerable degree	2	6	-4	16	2.666666667
	Applies to me to some degree	24	20	4	16	0.8
	Does not apply to me	20	14	6	36	2.571428571
	Chi (*p*)	**0.007364779**	10			
		$p < 0.05$				

Question 12: I tend to forget to take or skip my diabetes medication

Question 12	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	15	10	5	25	2.5
	Applies to me to a considerable degree	8	5	3	9	1.8
	Applies to me to some degree	13	9	4	16	1.777777778
	Does not apply to me	14	26	-12	144	5.538461538
Post-Test:	Applies to me very much	5	10	-5	25	2.5
	Applies to me to a considerable degree	2	5	-3	9	1.8
	Applies to me to some degree	5	9	-4	16	1.777777778
	Does not apply to me	38	26	12	144	5.538461538
	Chi (*p*)	**0.001552724**				
		$p < 0.05$				

Question 13: Sometimes I have real “food binges” (not triggered by hypoglycemia).

Question 13	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	14	10	4	16	1.6
	Applies to me to a considerable degree	16	12	4	16	1.333333333
	Applies to me to some degree	7	4.5	2.5	6.25	1.388888889
	Does not apply to me	13	23.5	-10.5	110.25	4.691489362
Post-Test:	Applies to me very much	6	10	-4	16	1.6
	Applies to me to a considerable degree	8	12	-4	16	1.333333333
	Applies to me to some degree	2	4.5	-2.5	6.25	1.388888889
	Does not apply to me	34	23.5	10.5	110.25	4.691489362
	Chi (*p*)	**0.011846885**				
		$p < 0.05$				

Question 14: Regarding my diabetes care, I should see my medical practitioner more often.

Question 14	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	9	15	-6	36	2.4
	Applies to me to a considerable degree	15	13	2	4	0.307692308
	Applies to me to some degree	8	12	-4	16	1.333333333
	Does not apply to me	18	10	8	64	6.4
Post-Test:	Applies to me very much	21	15	6	36	2.4
	Applies to me to a considerable degree	11	13	-2	4	0.307692308
	Applies to me to some degree	16	12	4	16	1.333333333
	Does not apply to me	2	10	-8	64	6.4
	Chi (*p*)	**0.003948698**				
		$p < 0.05$				

Question 15: I tend to skip planned physical activity.

Question 15	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	25	19	6	36	1.894736842
	Applies to me to a considerable degree	11	8.5	2.5	6.25	0.735294118
	Applies to me to some degree	13	10	3	9	0.9
	Does not apply to me	1	12.5	-11.5	132.25	10.58
Post-Test:	Applies to me very much	13	19	-6	36	1.894736842
	Applies to me to a considerable degree	6	8.5	-2.5	6.25	0.735294118
	Applies to me to some degree	7	10	-3	9	0.9
	Does not apply to me	24	12.5	11.5	132.25	10.58
	Chi (*p*)	**0.000200588**				
		$p < 0.05$				

Question 16: My diabetes self-care is poor.

Question 16	**Answers**	**Observed**	**Expected**	**Deviation (O-E)**	**Deviation Squared (O-E)^2**	**(O-E)^2/E**
Pre-Test	Applies to me very much	25	12	13	169	14.08333333
	Applies to me to a considerable degree	12	6	6	36	6
	Applies to me to some degree	13	7	6	36	5.142857143
	Does not apply to me	0	6.86	-6.86	47.0596	6.86
Post-Test:	Applies to me very much	0	12	-12	144	12
	Applies to me to a considerable degree	0	6	-6	36	6
	Applies to me to some degree	1	7	-6	36	5.142857143
	Does not apply to me	49	6.86	42.14	1775.7796	258.86
	Chi (*p*)	0.034752981				
		$p < 0.05$				

Appendix D: Diabetes Prevention Power Point for Healthcare Providers at the study clinic

Diabetes Prevention for you and your family

WELLNESS FOR FAMILIES
PRESENTED BY YESENIA DEJESUS

Volunteer Staff Education

Stay Healthy

These are things all people have to do to stay healthy:

- Avoid smoking
- Get regular exercise
- Eat a balanced diet
- Weight management

Measurement of Good Health

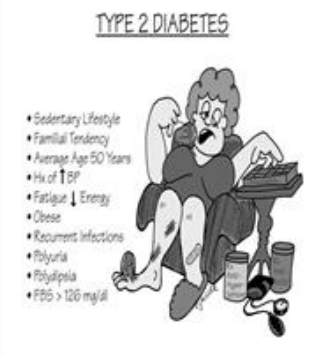
- Blood pressure of 130/80 or lower
- Total cholesterol below 200
- Hemoglobin A1C below 6.5%
- Feeling well and being active
- A waistline below 35 inches

Questions to Ponder

To reach these measures of good health, people usually have to make changes in their daily lives. They often ponder the following questions:

- What are the risks if I don't change?
- Do I really have to change?
- What are the costs and what are the benefits?
- What will my friends and family say?

Previous risks may add to future risks



Future Risk (women)

- If you had gestational diabetes or a family member has diabetes, you are at risk of developing diabetes ***unless*** you make changes in eating patterns and exercise.

Future Risk

- Most Americans do not eat well
- Do not exercise enough
- Weigh too much
- And therefore are at increased risk of diabetes!

Cost versus benefits

- There may be costs involved as you buy wholesome foods or walking shoes.
- Cost tend to be outweighed by the benefits of saving healthcare costs later for diabetes care.

How family and friends are affected

- Sometimes they may be upset when your changes affect them in ways such as not buying sweets or going for a walk instead of watching TV.
- Eventually they come to accept the needed changes and feel better too.

Basic skills to support your ways to improve your health

- Communication
- Assertiveness
- Problem solving
- Time management

Communication

- Listen to family and friends
- Talk things out

Assertiveness

- Speak up for your goals
- Be understanding of the other person's frustration

Problem solving

If you don't feel safe walking alone, find a friend or family member to walk with you

Time management

- First things first!
- Your health and your family's health are top priorities!

Exercise

- Good things come from exercise
- Exercise for stress control
- Exercise for your soul
- Exercise for your self-image

Exercise choices

- Choose an exercise that you enjoy and that fits your personality

Getting started with exercise

- Make it as enjoyable as you can
- Doing a little is better than doing nothing
- Consider lessons or joining a group (dance, Zumba, hike, etc.)
- Exercise daily to get use to it
- Start slowly

Skills from A to Z to help you persevere!

- A- allow time for your health needs
- B- begin now
- C- choose wisely
- D- draw a deep breath and let go
- E- eat in healthy ways
- F- focus on your new health plan and lifestyle
- G- give

Skills from A to Z to help you persevere!

- H- humor, use it!
- I- imagine a happy future
- J- join supports groups
- K- know your strengths and weakness
- L- look for alternatives
- M- motive your medication control
- N- nurture yourself

Skills from A to Z to help you persevere!

- O- one step at a time
- P- practice patience
- Q- quality time
- R- relax
- S- smile
- T- time management

Skills from A to Z to help you persevere!

- U- use your talents!
- V- visit the healthcare provider frequently
- W- wow, what a change!
- X- eXercise more
- Y- yearly check up for diabetes and health
- Z- zest for life

References

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